Scalable Traffic Management for Emergency Response Operations (STEReO)

Technology for Improving the Response to Natural Disasters

Challenge

- Emergency response operations aren't easy:
    - Conducted under adverse conditions
    - Involve numerous organizations
    - Limited communication and infrastructure
    - Manual coordination to deconflict/use airspace
    - Difficult to deliver information when timely
- The result? Safe procedures with minimal technological advances

Expected Impacts

- A modernized emergency response can provide:
    - Enhanced airspace awareness that will enable a higher utilization of aerial assets
    - Advances in onboard autonomy that will enable new mission profiles
    - Digital communication networks that will shorten the "raw-to-actionable" life cycle for gathered intel
- The result? Help responders do more, know more, safely

Proposed Solution

- Use innovative communication approaches to enable new traffic management and autonomous vehicle capabilities, providing a data-rich common operating picture

- Pursue five technical focus areas →

- Let the user community drive the direction and pace

communications | human factors | UTM services | domain expertise & tools | autonomy
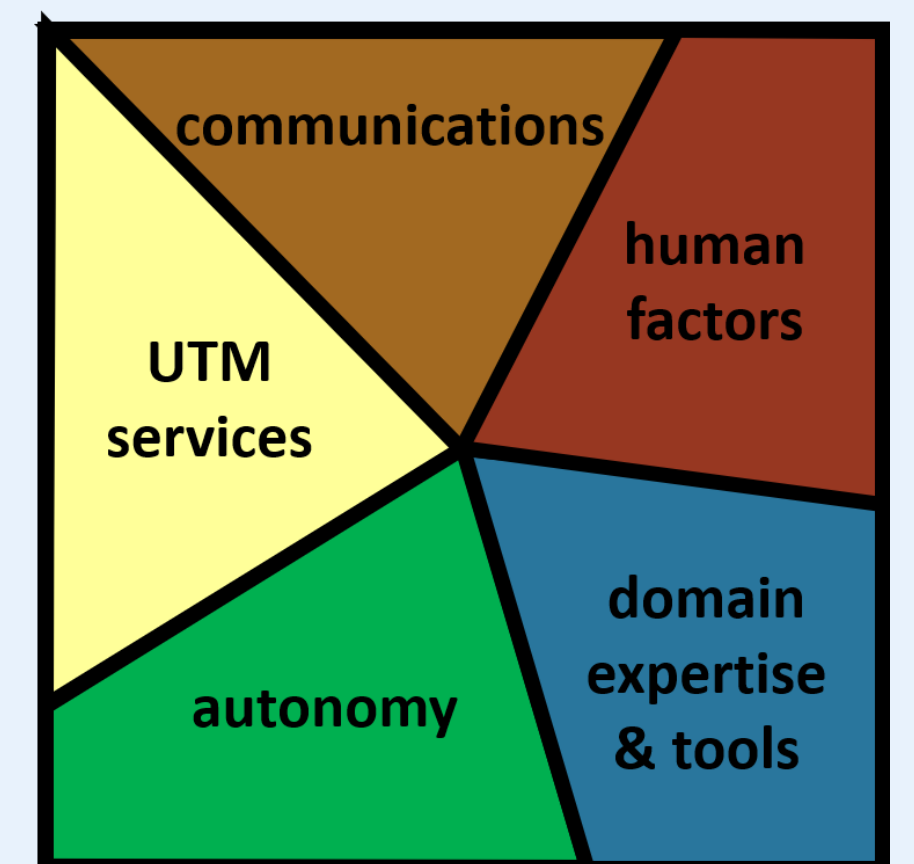
Results

- Formalized partnerships with industry and the wildland firefighting community
- Joint flight demonstration, blending NASA technologies with a scheduled training exercise
- Completed flight test for airborne UAS situational awareness
- Triggered the formulation of a new ARMD project

Next Steps

- More research is needed to further understand the human-factors issues associated with integrating UAS operations into shared airspace
- Continue to prioritize the needs of wildland firefighters over programmatic/research interests

Partners and/or Participants

- U.S. Forest Service, federal practitioner and domain expert

- CAL FIRE, state practitioner and domain expert

- Avision, tech-industry leader and UTM service supplier

POC: Joey Mercer, NASA Ames Research Center

GRC and ARC researchers testing a portable traffic management system and communications network at a USFS training exercise in Mesa, AZ.

LaRC researchers operating simulated UAS operations equipped with advanced onboard autonomy at a CAL FIRE training exercise in Redding, CA.

ARC researcher participating in STEReO's joint flight demonstration with CAL FIRE in Redding, CA.

STEReO's Uncrewed Aircraft System Pilot kit (UASP-kit) being used by USFS UAS operators in Salmon, ID.

IMAGINAVIATION